REMARKS

Claims 1-16 are pending in the Pending Application, Claims 1, 2, 5-8, 11, 12, 14, and 15 were previously withdrawn, Claims 3, 4, 9 and 10 have been rejected and Claims 13 and 16 have been allowed.

The Examiner has rejected Claims 3, 4, 9 and 10 under 35 USC 103(a) as being unpatentable over Applicant's admission of prior art in view of Leonard et al. (U.S. Patent No. 5,285,472).

Claim 3 recites a *reverse spreading device* including a frequency error correcting device configured to receive a complex base band signal, count a number of chips of the complex base band signal, and sequentially rotate a phase of the complex base band signal on a complex plane by a step number multiple of a phase angle, wherein the frequency error correcting device *maintains amplitude information* of I and Q components of the complex base band signal in the rotation corrected complex base band signal.

As is well-known, a *reverse spreading device* is used on the *receiving* end of a communication system to retrieve a signal transmitted after the signal had been spread using a spread code (such as CDMA) on the transmit end of the system. Also as recited in Claim 3, the signal acted upon by the reverse spreading device is a *complex base band signal* including an in-phase (I) and a quadrature (Q) component. It is also well known that a complex base band signal with I and Q components on the receiving end of a communication system is the result of a quadrature demodulation (i.e. detection) of a carrier signal modulated using phase modulation (such as QPSK) on the transmit end.

Applicant had previously stated that "the limitation reciting that the in-phase and quadrature phase components of a complex base band signal include amplitude information is the inherent result of the modulation/demodulation processes used to *produce* the *complex base band signal*." While this is true, Leonard et al. specifically *removes* the amplitude information from the complex base band signal, and therefore does not teach or suggest "a *reverse spreading device* including a frequency error correcting device which *maintains amplitude information.*"

Leonard et al. teaches a system including a phase quantizer 16 which uses a local oscillator 20 to derive in-phase and quadrature components of a received signal r(t) relative to a local oscillator signal at a frequency f_0 (See Figs. 1 and 3, col. 2, lines 43-57). The system shown in Fig. 1 also includes a clock 22 which provides a clock signal at a clock frequency f_c corresponding to a chip rate of the code (i.e. f_c=1/T). The phase quantizer 16 utilizes the clock signal from the clock 22 and the in-phase and quadrature components for quantizing the phase of the received signal R(t) into 2^S sectors, where S is an integer, and provides on leads 24 to an acquisition processor 26 an S-bit digital signal representative of the Quantized phase at a rate corresponding to the clock frequency f_c. Illustratively, S=3 so that the phase of the received signal R(t) is Quantized in octants. The structure described in Leonard et al. results in a continuous routing bias of the quantized phase octants, which must be eliminated (see col. 3, lines 1-2), the quantized phase octants are utilized in post-processing. In this technical field, *"quantized"* means that amplitude information is *removed*. Therefore, in the device of Leonard et al., after in-phase and quadrature components [100, 501 and [200, 100] of a received signal R(t) are quantized, the quantized signals have only value [O].

In summary, Leonard et al. discloses *rotating* of only phase information about a complex vector, by *removing* amplitude information, and fails to teach the present invention's feature that amplitude information is *maintained* even after rotation correction. As stated in Leonard et al., "The in-phase and quadrature components are treated as *components of a vector* and are *quantized*, at the clock frequency f_c, by the octant quantizer 36, which compares the two vector components to determine which of *eight* phase octants the received signal sample is in. This *octant information* is then *encoded into three bits* on the leads 24. The *digitized phase quantized signals* on the leads 24 are then provided, at the chip rate, as inputs to the acquisition processor 26." Clearly, Leonard et al. does not teach or suggest a frequency error correcting device which *maintains amplitude information,* since the amplitude information is taken out of the signal before it ever reaches the acquisition processor 26.

Therefore, Applicants respectfully request allowance of independent Claim 3. Claims 4, 9, and 10 depend from Claim 3 and should be allowed for the same reasons and also because they recite additional patentable subject matter.

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CONCLUSION

In view of the above, entry of the present Amendment and allowance of the Claims are respectfully requested. If the Examiner has any questions regarding this amendment, the Examiner is requested to contact the undersigned. If an extension of time for this paper is required, petition for extension is herewith made.

Respectfully submitted,

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